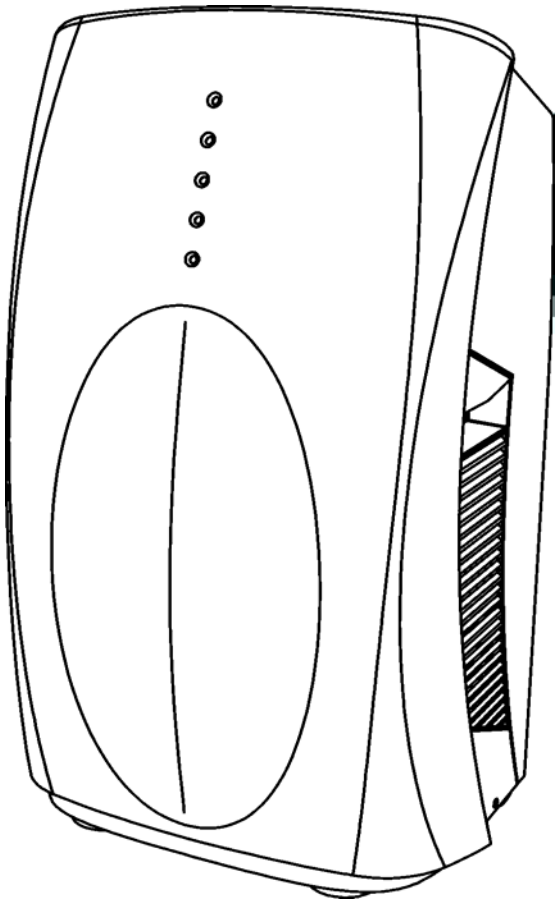
# TECHNICAL DATA & SERVICE MANUAL

# MAGICO 9.2

## AMG26MIR



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# 1. SPECIFICATIONS

## 1-1 Unit Specifications

| | | | | | | |
|---|---|---|---|---|---|---|
| **Power source** | | | | | 220 - 240 V ~ 50 Hz | |
| **Voltage rating** | | | | | 230 V | |
| **Performance** | | | | | **COOLING** WITH AIR EXHAUSTING TUBE | **DEHUMIDIFICATION** WITHOUT AIR EXHAUSTING TUBE |
| Capacity (1) | (1) | | | W | 2570 | - |
| Efficiency (2) | (2) | | | W/W | 2,62 | |
| Air flow rate (evaporator) | | Hi/Me/Lo | | m³/h | 310 / 285 / 260 | 260 |
| Air flow rate (condenser) | | Hi/Me/Lo | | m³/h | 290 / 265 / 240 | 240 |
| Moisture removal | | | | l/h | 1,25 | - |
| Moisture removal | (3) | | | l/24h | - | 27 |
| Moisture removal | (4) | | | l/24h | - | 51 |
| **Electrical ratings** | | | | | | |
| Available voltage range | | | | V | 198 - 264 | |
| Power input | | | | W | 925 | - |
| Running amperes | | | | A | 4,1 | - |
| Power input | (3) | | | W | - | 970 |
| Running amperes | (3) | | | A | - | 4,4 |
| Power input | (4) | | | W | - | 1090 |
| Running amperes | (4) | | | A | - | 5 |
| Compressor locked rotor | | | | A | 18 | |
| **Features** | | | | | | |
| Controls/Temperature controls | | | | | Microprocessor / I.C. Thermostat | |
| Control unit | | | | | Wireless remote control unit | |
| Timer | | | | | ON/OFF 24 hours and program | |
| Fan speed | | | | | 3 and auto | 1 |
| Air Filter | | | | | Washable | |
| Operation sound Lp | (5) | Hi/Me/Lo | | dB(A) | 55 / 53 / 51 | 51 |
| Compressor | | | | | Rotary (hermetic) | |
| Refrigerant / Amount charged at shipment | | | | g | R410A / 590 | |
| Refrigerant control | | | | | Capillary tube | |
| Water tank capacity | | | | liters | ~ 3,3 | |
| Flexible exhaust tube | I.D. | | | mm | 115 | |
| | extended length | | | m | 1 | |
| Hole in the window | | | | mm | 138 | |
| Electric cable with plug | length | | | m | 2,9 | |
| **Dimensions & Weight** | | | | | | |
| Unit dimensions | Height | | | mm | 965 | |
| | Width | | | mm | 530 | |
| | Depth | | | mm | 415 | |
| Package dimensions | Height | | | mm | 1180 | |
| | Width | | | mm | 595 | |
| | Depth | | | mm | 500 | |
| | Volume | | | m³ | 0,35 | |
| Weight | Net | | | kg | 34 | |
| | Shipping | | | kg | 36 | |

Data subject to change without notice

Rating conditions

(1) Cooling indoor air temperature: 27 °C d.b. , 19 °C w.b

(2) Cooling indoor air temperature: 35 °C d.b. , 24 °C w.b

(3) Dehumidification indoor air temperature: 27 °C d.b. , 21 °C w.b , 60% u.r.

(4) Dehumidification indoor air temperature: 30 °C d.b. , 27 °C w.b , 80% u.r.

(5) Reference data: room size 100 $m^3$ , reverberation time 0,5 s , distance 2 m

| Operating limits | | maximum | minimum |
|---|---|---|---|
| Indoor air temperature | Cooling | 35 °C d.b. , 24 °C w.b | 16 °C d.b. , 14 °C w.b |
| | Dehumidification | 35 °C d.b. , 28 °C w.b | 16 °C d.b. , 14 °C w.b |

## 1-2 Major Component Specifications

| Controller PCB | (CE) | WSA |
|---|---|---|
| Controls | | Microprocessor |
| Control circuit fuse | | 250 VAC - 3,15 A |
| | | |

| Thermistor (coil sensor) | (TH1) | NTC |
|---|---|---|
| Resistance | 25 °C | 10 °C ± 5% |
| | | |

| Thermistor (room sensor) | (TH2) | NTC |
|---|---|---|
| Resistance | 25 °C | 10 °C ± 5% |
| | | |

| Fan & Fan Motor | | | (FM) | M01974 |
|---|---|---|---|---|
| Type | | | | Centrifugal blower |
| Q'ty ……. Dia. and lenght | | | mm | 1…. Ø 170 / L 156 |
| No. Of poles | | | | 4 |
| Rpm | | | Hi/Me/Lo speed | 1275/1156/1058 with flexible exhaust tube retracted |
| Power input (230 V) | | | W (Hi / Lo) | 109/84/80 |
| Coil resistance (25°C ) | | | Ω | GRY-WHT: 87,3 ÷ 101 |
| | | | | WHT-VLT: 36,2 ÷ 41,6 |
| | | | | VLT-YEL: 22,8 ÷ 26,3 |
| | | | | YEL-PNK: 22,8 ÷ 26,3 |
| | | | | GRY-BRN: 51,9 ÷ 59,6 |
| Safety devices | type | | | Thermostat |
| | operating temp. | open | °C | 150 ± 10 |
| | | close | °C | Automatic |
| Run capacitor | | | (C1) | |
| | | | µF | 3 |
| | | | VAC | 450 |

| Float microswitch | | (MS) | CROUZET F83161.3 |
|---|---|---|---|
| Contact rating | | | 16(4) A - 250 VAC |
| | | up | open |
| | | down | close |

| | | |
|---|---|---|
| | | |
| | | |
| | | |

| Compressor | | (CM) | Rotary (hermetic) |
|---|---|---|---|
| Model | | | 5PS102EAA (R410A) |
| Nominal input (230 V) | | W | 830 |
| Compressor oil | | type …. cc | RB68A or Freol Alpha 68M ….. 350 |
| Coil resistance ( 20°C) | C - R | Ω | 3,86 ± 7% |
| | C - S | Ω | 3,30 ± 7% |

Data subject to change without notice

| Safety devices | | | (OLR) | EXTERNAL TYPE |
|---|---|---|---|---|
| Type | | | | MRA99901-9201 or MRA99437 |
| Operating temperature | open | | °C | 148 ± 5 °C |
| | close | | °C | 69 ± 9 °C |
| Operating amperes (25 °C) | open with | | | 16 A in 6 ÷ 16 s |

| Run capacitor (compressor) | (C3) | |
|---|---|---|
| | µF | 30 |
| | VAC | 450 |

| Condensate pump | (PC) | |
|---|---|---|
| Model | | 291036 |
| Nominal input (230 V) | W | 5 |
| Winding resistance | Ω | 778 ± 8% |

| Pump relay | (RP) | H62S |
|---|---|---|
| Contact rating | | 5 A - 220 V |
| Coil supply | VAC | 230 |
| Coil resistance (20 °C) | kΩ | 17,2 ± 10% |

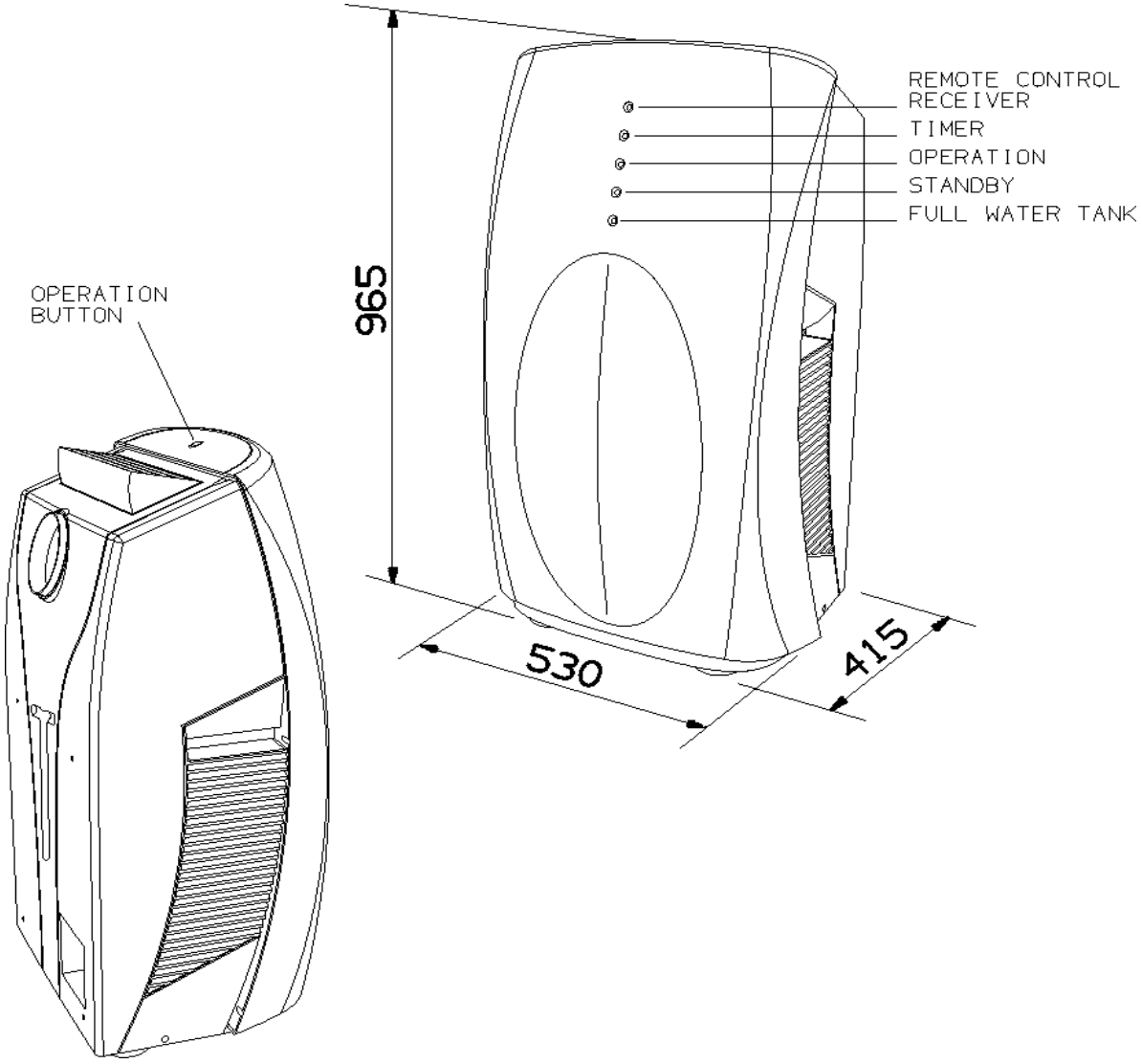
| Heat exchanger coil | | EVAPORATOR COIL |
|---|---|---|
| Coils | | Aluminium fin - 3/8" Copper tube |
| Rows | | 4 |
| Fin pitch | mm | 1,8 |
| Face area | m² | 0,042 |

| Heat exchanger coil | | CONDENSER COIL |
|---|---|---|
| Coils | | Aluminium fin - 7mm Copper tube |
| Rows | | 5 |
| Fin pitch | mm | 1,3 |
| Face area | m² | 0,084 |

Data subject to change without notice

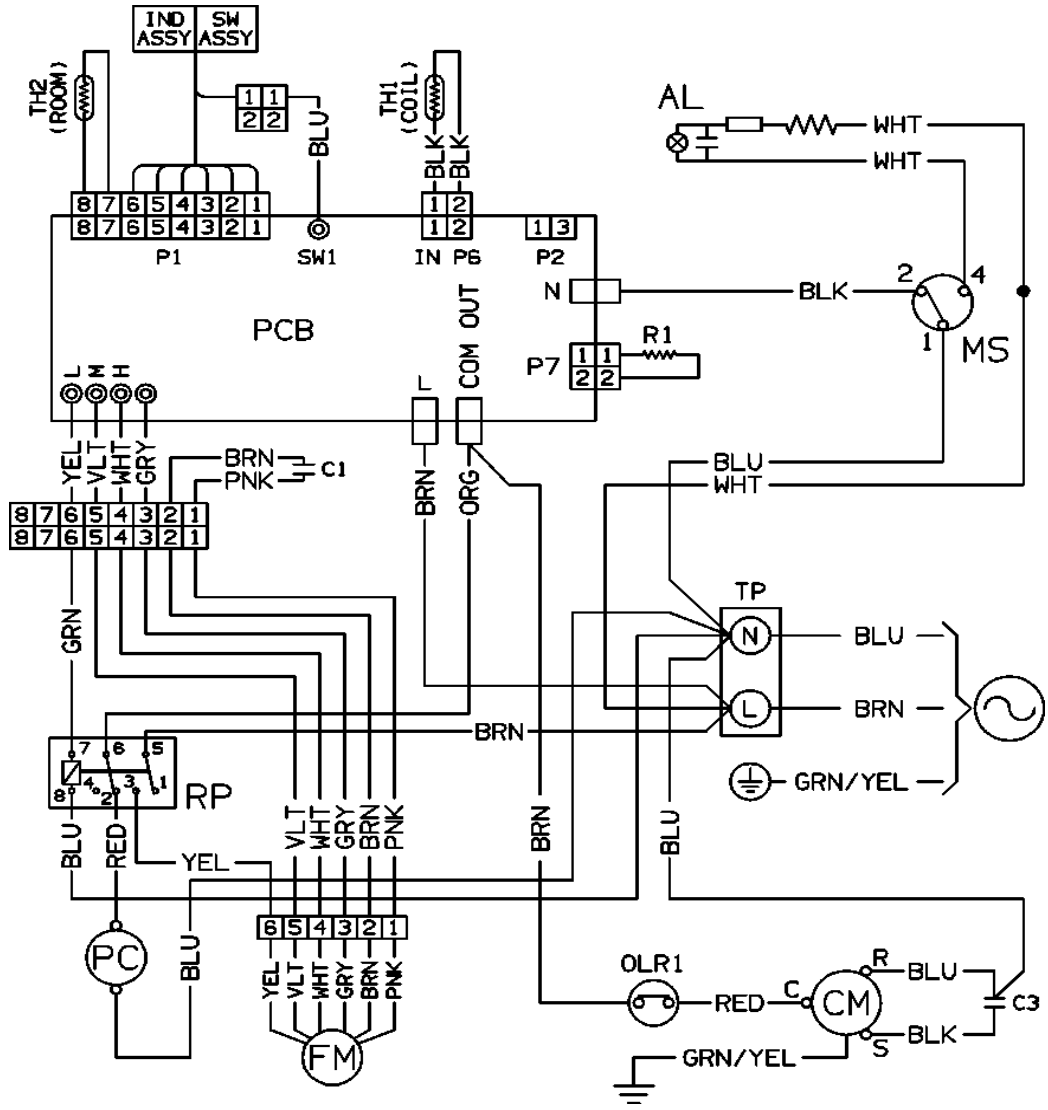
# 2. DIMENSIONAL DATA

## 2-1 Unit Dimensions



# 3. ELECTRICAL DATA

## 3-1 Electric Wiring Diagram



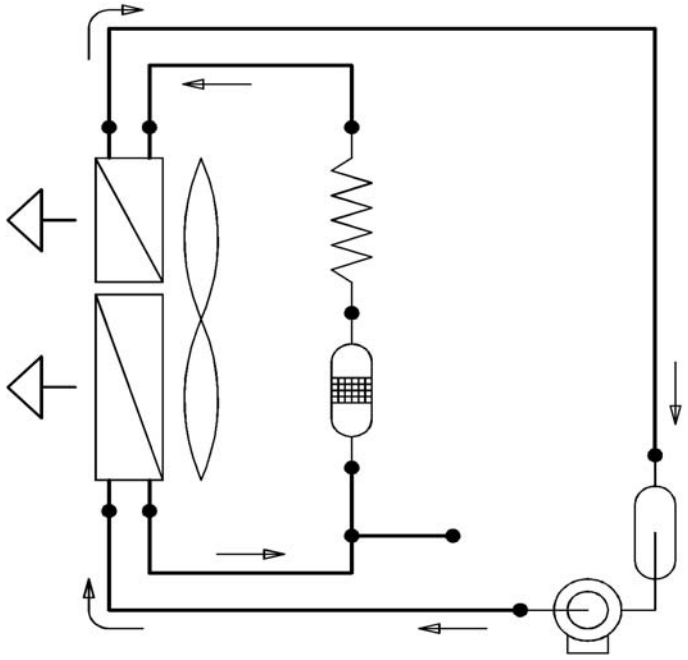

| | |
|---|---|
| COMPRESSOR | **CM** |
| CAPACITOR | **Cx** |
| RECEIVER | **IND** |
| FAN MOTOR | **FM** |
| OVERLOAD PROTECTOR | **OLRx** |
| ELECTRONIC CONTROL | **PCB** |
| ALARM LIGHT | **AL** |
| CONDENSATE PUMP | **PC** |
| PUMP RELAY | **RP** |
| ON/OFF SWITCH | **SW** |
| FLOAT MICROSWITCH | **MS** |
| ELECTRIC HEATER RELAY | **RR** |
| SENSOR | **THx** |
| RESISTANCE | **Rx** |
| TERMINAL PLATE | **TP** |

**Legend of colors**

| | |
|---|---|
| BLACK | **BLK** |
| BLUE | **BLU** |
| BROWN | **BRN** |
| GREEN/YELLOW | **GRN/YEL** |
| ORANGE | **ORG** |
| RED | **RED** |
| WHITE | **WHT** |
| YELLOW | **YEL** |
| GREEN | **GRN** |
| PINK | **PNK** |
| VIOLET | **VLT** |
| GREY | **GRY** |

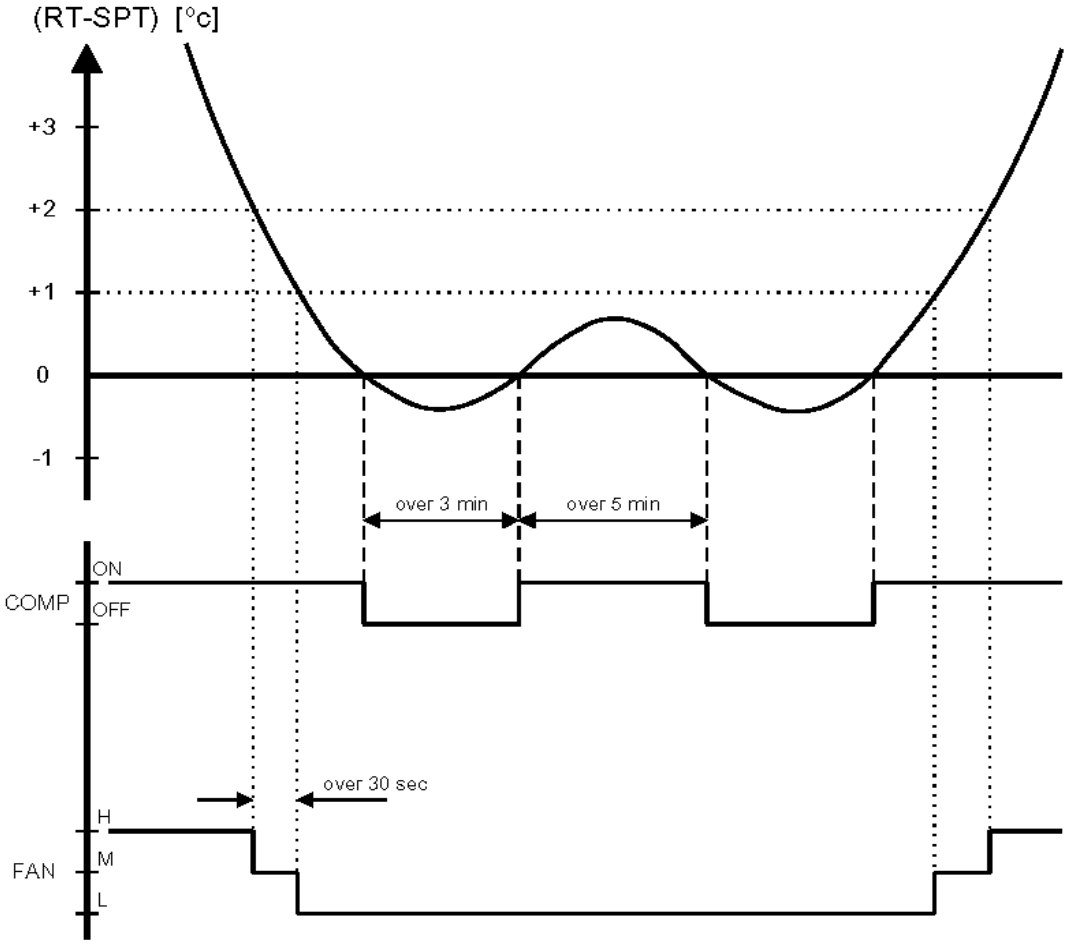
# 4. REFRIGERANT FLOW DATA

## 4-1 Refrigerant flow diagram



# 5. FUNCTION

## 5-1 Cool mode operation

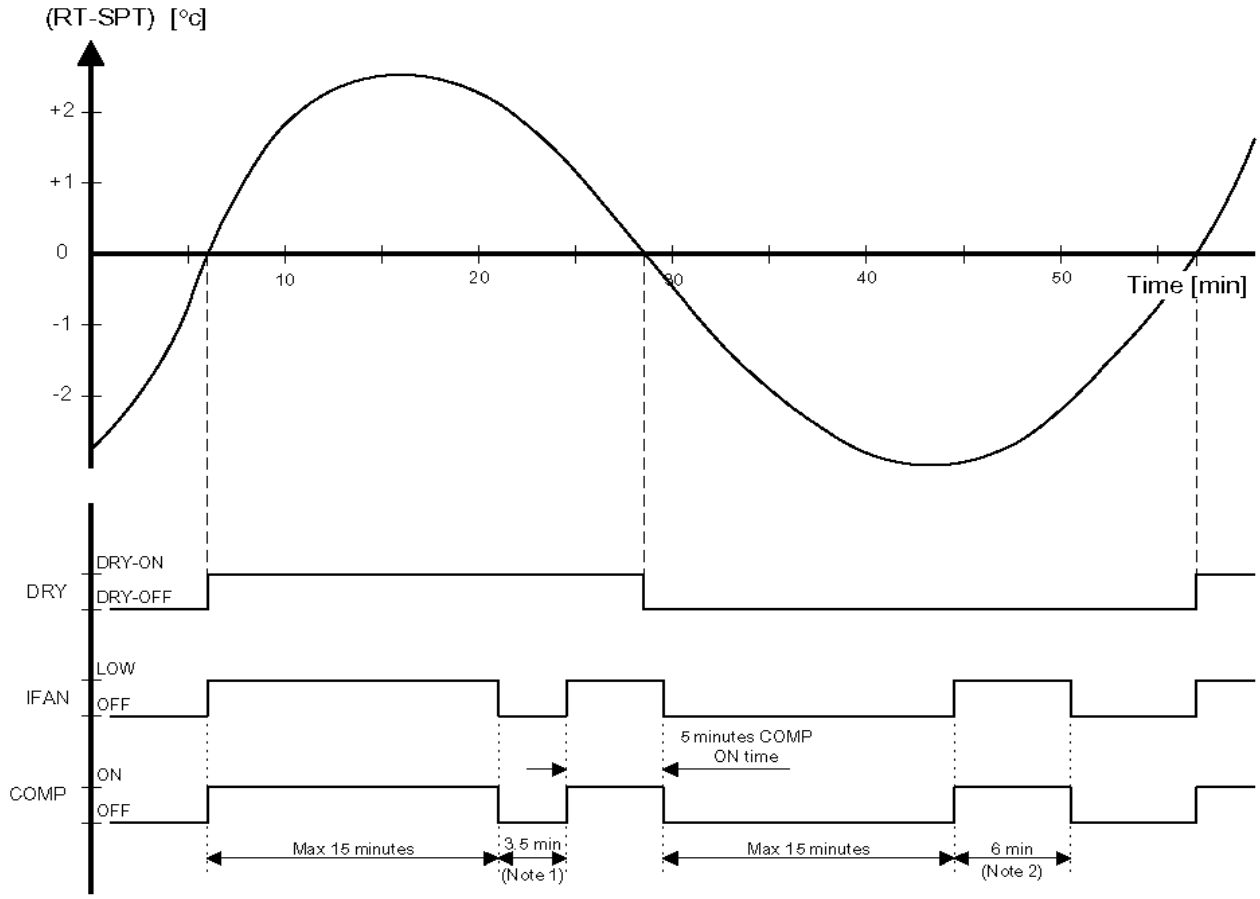



In cool mode, the operation of the compressor (COMP) and fan (FAN) are determined by the difference between the room temperature (RT) and the set point temperature (SPT) as in the graph above.

notes:

1. In this graph, the FAN is operating in the "auto fan speed" setting. If the user has selected the low, medium or high fan speed, the FAN will run constantly at that speed only.
2. In addition to the value of (RT-SPT), the operations of the relays are also controlled by protection delays. For example, (a) the minimum On/Off time of the COMP is 5 min and 3 min respectively, and (b) the FAN can change speed only after it has operated at the same speed for 30 sec.

## 5-2 Dry Mode Operation (Dehumidification)




In Dry Mode, the unit operates in a mild cool mode to lower the umidity of the room. In order to maintain a high efficiency in the drying operation without over lowering the room temperature excessively, the dry mode is different from the Cool Mode in two ways.

1. The FAN is forced to operate at low speed only and is turned off with the COMP.
2. The unit operates in either "dry-on" state or the "dry-off" state. If RT=SPT, the unit will operate in "dry-off" state. The COMP is forced to operate for 6 min after it has stopped working for 15 min. If RT>SPT, the unit will operate in "dry-on" state. The COMP is forced off for 3,5 min after it has been working for 15 min.

Note 1: COMP is forced off in "dry-on" state.
Note 2: COMP is forced to operate in "dry-off" state.

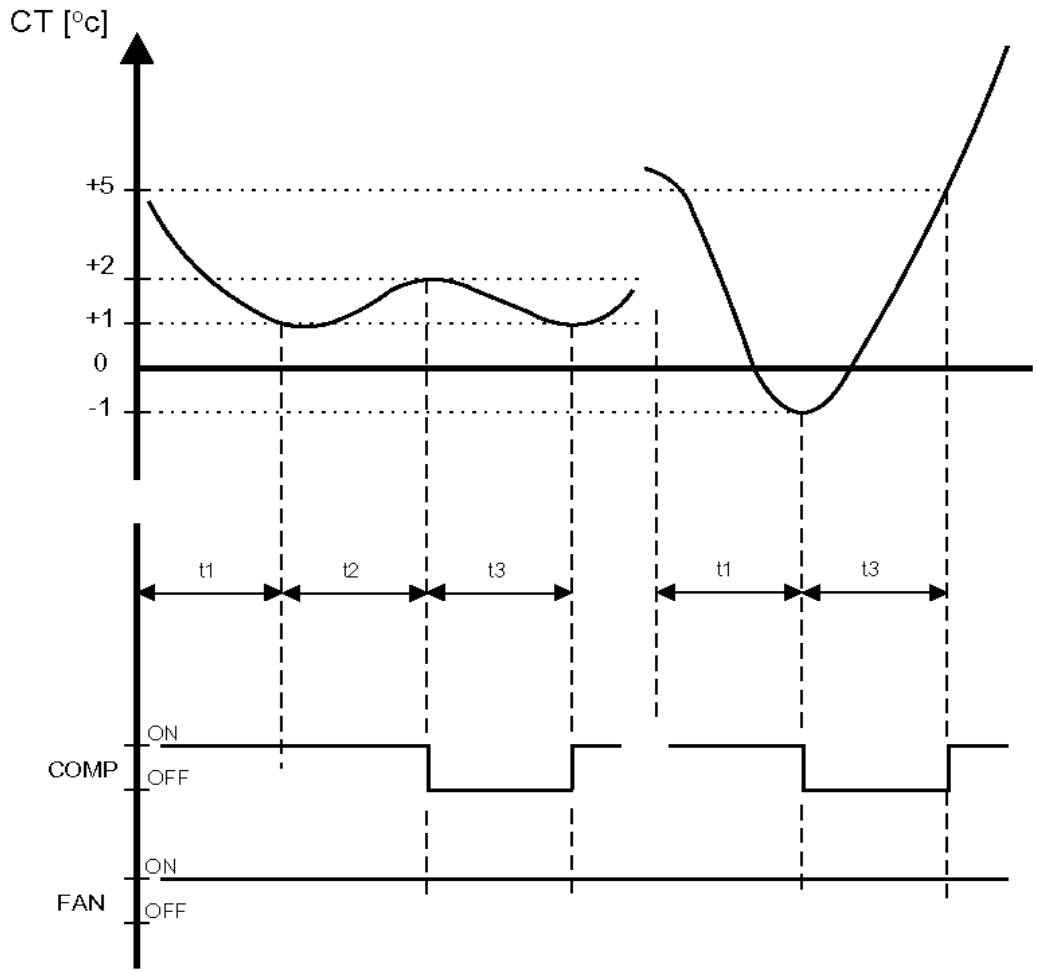
## 5-3 Fan Mode Operation

In Fan Mode, the fan is turned on to improve the air circulation in the room. COMP remain off all the time.

Note: If the user has selected the auto fan speed setting, the FAN speed would be selected by the unit automatically according to the difference between RT and SPT, as in cool mode.

## 5-4 Protection Operations in Cool and Dry Modes

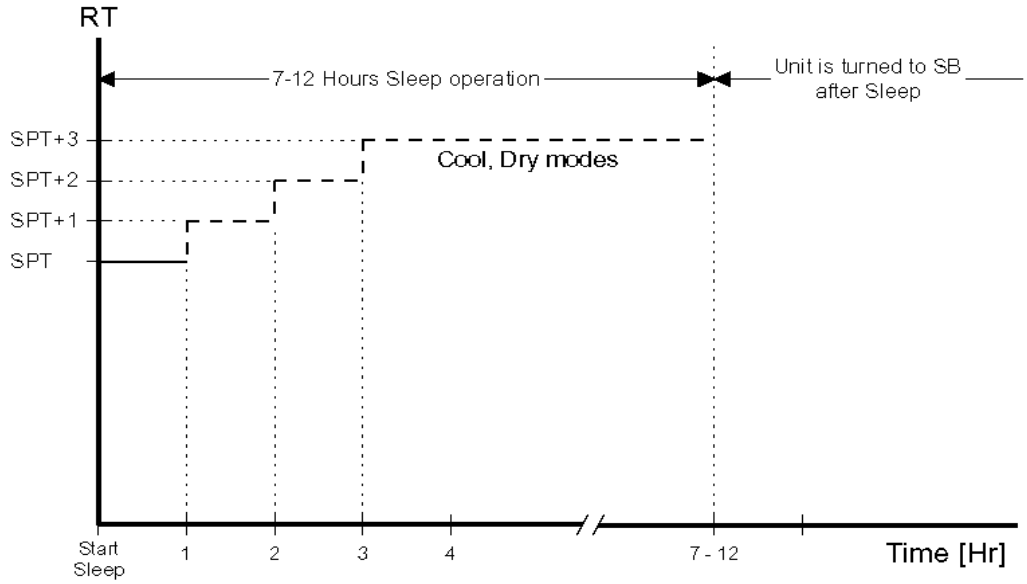
1. Evaporate coil defrost protection.
   The evaporate coil defrost protection can prevent the ice formation at the coil when the ambient temperature is low.




t1= 5 min minimum for COMP starting
t2= 20 min maximum
t3= COMP stop for 10 min minimum

## 5-5 Sleep Function

Room temperature is automatically controlled to compensate for body temperature variations while sleeping.
This mode of operation is designed for maximal comfort in COOL mode.




## 5-6 Daily Timer Function

Unit can be programmed to be ON and OFF automatically at preset time everyday, by using a remote controller.
The resolutions of the ON/OFF timers are 10 min.

## 5-7 I-Feel Function

This feature is provided if the unit is used together with a remote controller with the I-FEEL function.
When this function is selected, the remote controller sends the room temperature measured by its build-in thermistor to the aircond for more accurate temperature control.

## 5-8 Manual Unit Control and LED Indicators

The push button switch and the LED indicators on the front of unit let the user to control the unit operation without a remote controller. Their operations are provided below.

Led indicators:

| | |
|---|---|
| **STAND BY** | 1. Lights up when the air conditioner is connected to power and is ready to receive the R/C commands<br>2. Blinks continuosly in case of any thermistor failure |
| **OPERATION** | 1. Lights up in operation mode (note: off in stanby mode)<br>2. Blinks for 0,5 sec to announce that a R/C infrared signal has been received and stored |
| **TIMER** | 1. Lights up during Timer and Sleep operation<br>2. Active on/off timer setting will become invalid after a power failure<br>When this happens, the unit is forced to restart in STBY mode, and the timer indicator indicator is blinked continuosly until (i) the unit is switched to OPERATION mode again , or (ii) any message from the R/C is received |

Push button switches:

| | |
|---|---|
| **OPERATION BUTTON** | Use to cycle the operation mode of the A/C unit among COOL and OFF modes, without using the R/C<br>Every time this switch is pressed, the next operation mode is selected, in the order:<br>Off mode => Cool mode => Off mode => Cool mode => ……. |

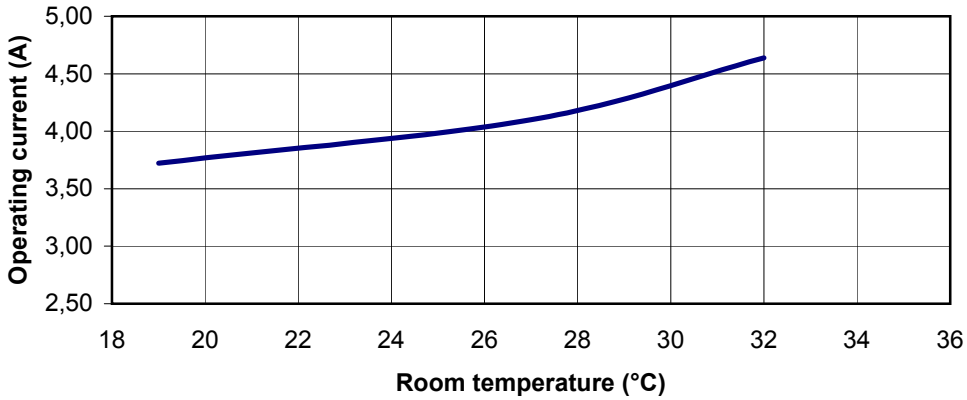
## 5-9 Recovery from Power Failure

Last unit settings (SPT, operation mode, etc) are saved in the EEPROM in the unit.
In case of power failure, these settings are restored automatically.

# 6. PERFORMANCE DATA

## 6-1 Performance Chart

Operating characteristics with relative humidity around 50%



# 7. TROUBLESHOOTING

## CHECK BEFORE AND AFTER TROUBLESHOOTING

### (A) Check power supply wiring.

*** WARNING:** If the following troubleshooting must be done with power being supplied, be careful about any uninsulated live part that can cause ELECTRIC SHOCK.

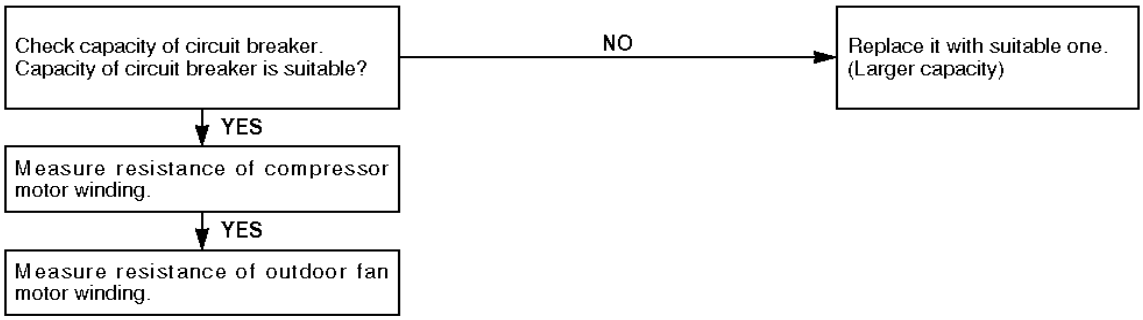
### (B) Check power supply.

* Check that voltage is in specified range (+/-10% of the rating)
* Check that power is being supplied

## 7-1 Air conditioner does not operate

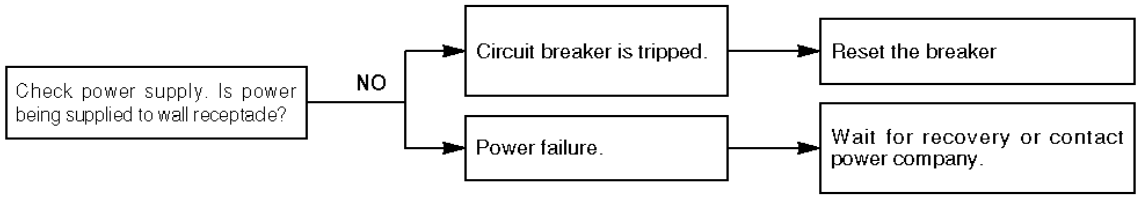
- **Circuit breaker trips (or fuse blows)**
  - When circuit breaker is set to ON, it trips in a few moments (resetting is not possible)
  - Measure insulation resistance there is a possibility of ground fault. If resistance value is 1 Mohm or less, insulation is defective

- **Circuit breaker trips in several minutes after turning air conditioner ON**
  - There is a possibility of short circuit

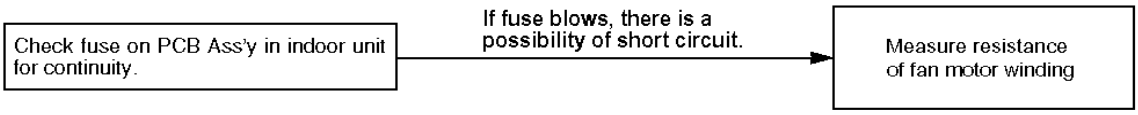

Check capacity of circuit breaker. Capacity of circuit breaker is suitable?
NO
Replace it with suitable one. (Larger capacity)
YES
Measure resistance of compressor motor winding.
YES
Measure resistance of outdoor fan motor winding.

- Unit not run

Power is not supplied

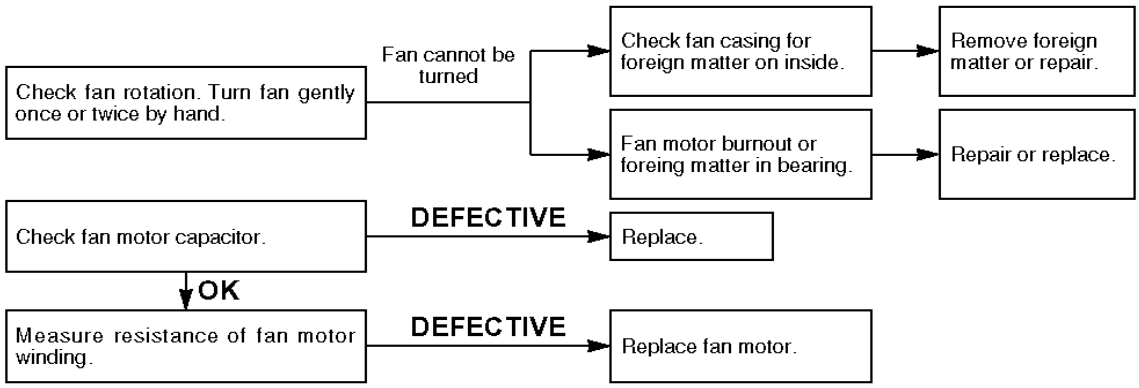

Check power supply. Is power being supplied to wall receptade?
NO
Circuit breaker is tripped.
Reset the breaker
Power failure.
Wait for recovery or contact power company.

Check fuse on PCB assy

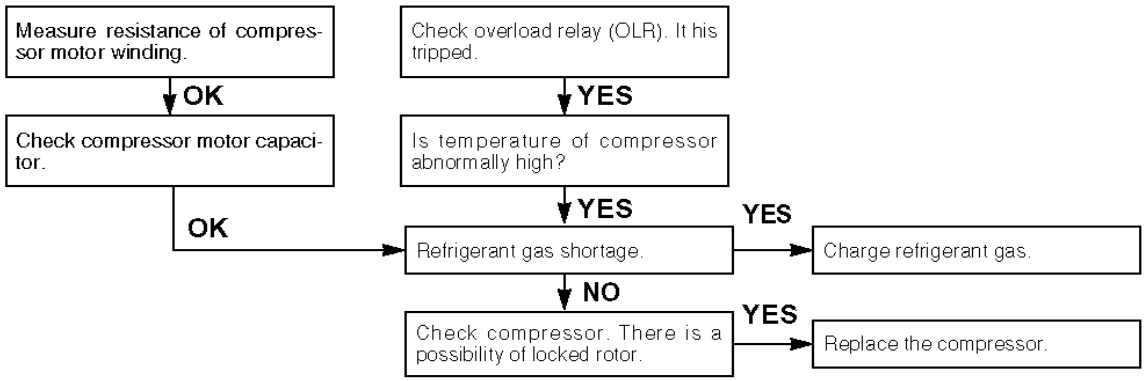

Check fuse on PCB Ass'y in indoor unit for continuity.
If fuse blows, there is a possibility of short circuit.
Measure resistance of fan motor winding

## 7-2 Some parts of air conditioner does not operate

**- Only fan does not run**

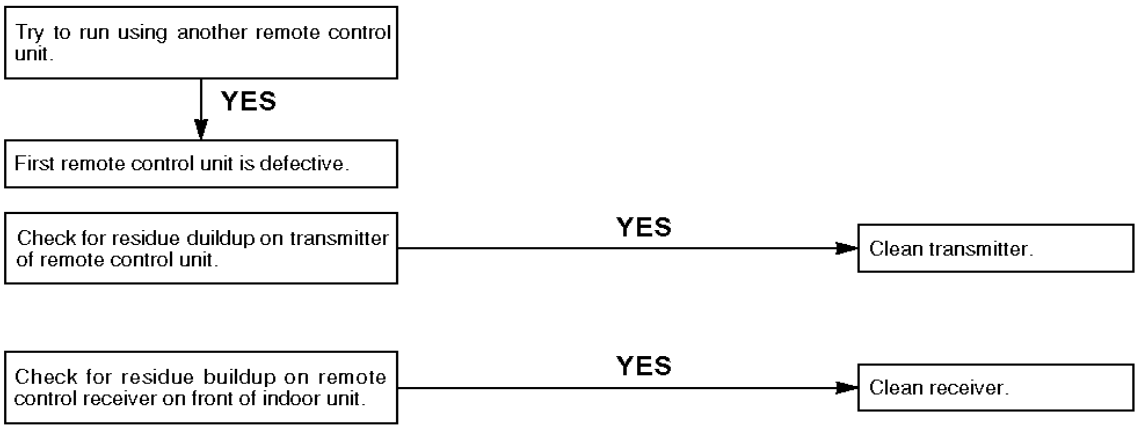

Check fan rotation. Turn fan gently once or twice by hand.
Fan cannot be turned
Check fan casing for foreign matter on inside.
Remove foreign matter or repair.
Fan motor burnout or foreing matter in bearing.
Repair or replace.
Check fan motor capacitor.
DEFECTIVE
Replace.
OK
Measure resistance of fan motor winding.
DEFECTIVE
Replace fan motor.

**- Only compressor motor does not run**

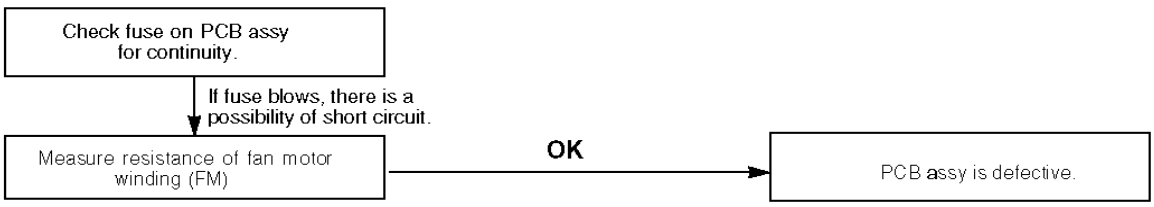



## 7-3 Air conditioner operate, but abnormalities are observed

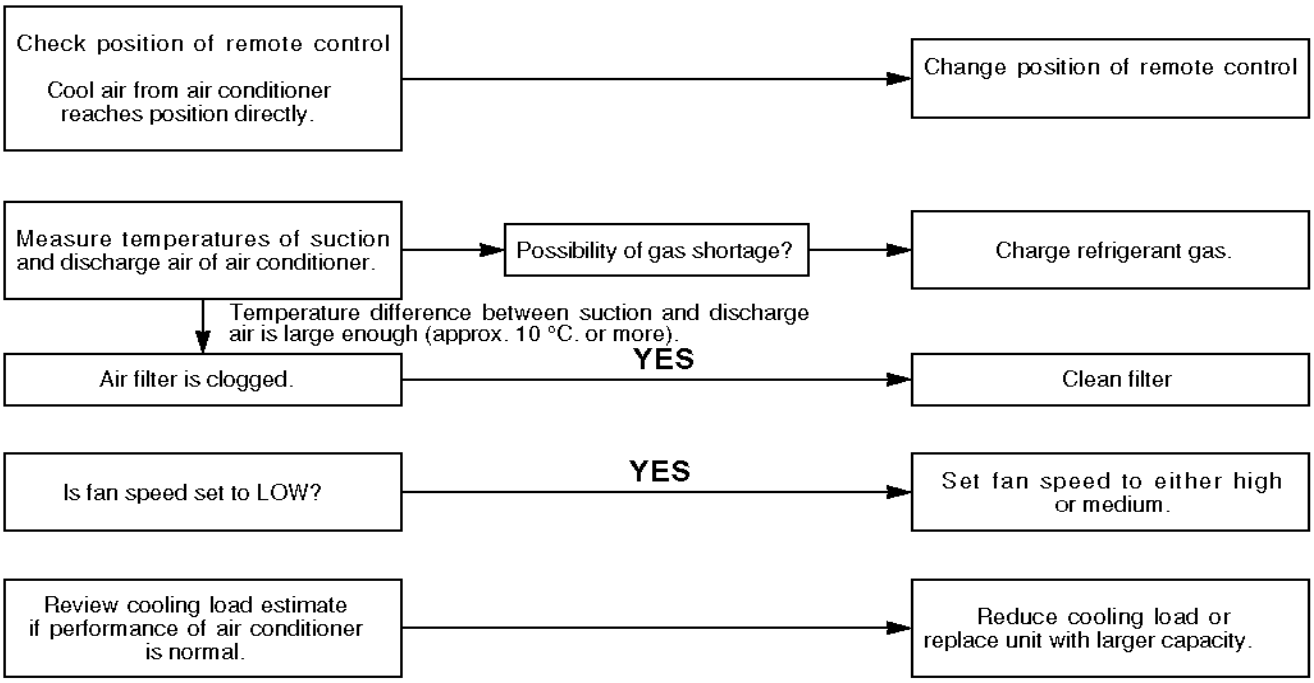
**- Check remote control unit**


Try to run using another remote control unit.
YES
First remote control unit is defective.
Check for residue duildup on transmitter of remote control unit.
YES
Clean transmitter.
Check for residue buildup on remote control receiver on front of indoor unit.
YES
Clean receiver.

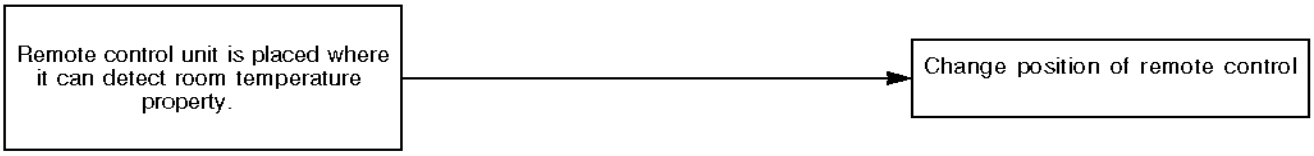
**- Check fuse on PCB assy**


Check fuse on PCB assy for continuity.
If fuse blows, there is a possibility of short circuit.
Measure resistance of fan motor winding (FM)
OK
PCB assy is defective.

## 7-4 Poor cooling

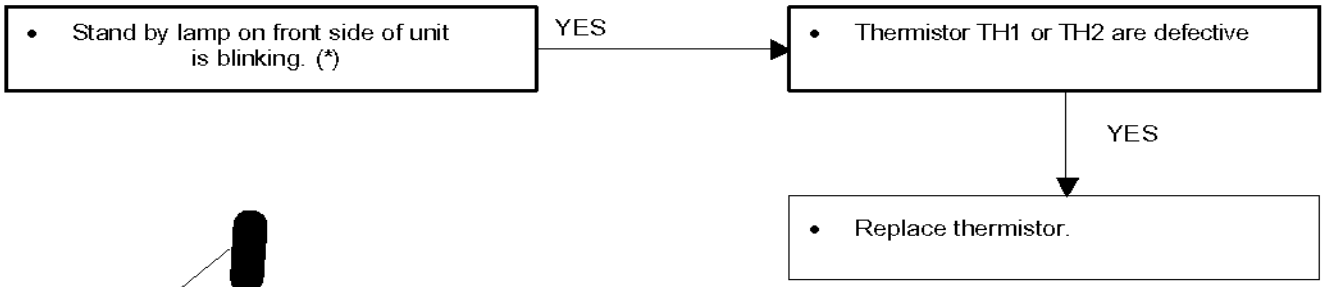

Check position of remote control
Cool air from air conditioner reaches position directly.
Change position of remote control
Measure temperatures of suction and discharge air of air conditioner.
Possibility of gas shortage?
Charge refrigerant gas.
Temperature difference between suction and discharge air is large enough (approx. 10 °C. or more).
Air filter is clogged.
YES
Clean filter
Is fan speed set to LOW?
YES
Set fan speed to either high or medium.
Review cooling load estimate if performance of air conditioner is normal.
Reduce cooling load or replace unit with larger capacity.

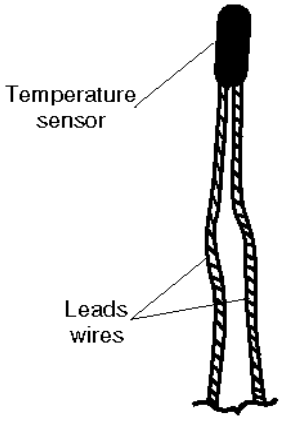
## 7-5 Excessive cooling




## 7-6 If a sensor is defective

**- TH1 (coil sensor) TH2 (room ambient teperature) are defective**




**NOTE: Alarm signal (*)**

Standby lamp, on front side of the unit, will blink when the thermistor is defective. At the same time the unit operate only for ventilation.

# 7-7 Checking electrical components

## - Measurement of insulation resistance

The insulation is in good condition if the resistence exceedes 1 MOhm

**a) power supply wires**

Clamp the earthed wire of the power supply wires with the lead clip of the insulation resiatance tester and measure the resistance by placing a probe on either of the power wires (fig.1). Then measure the resistance between the earthed wire and the other power wires (fig.1). Clamp an alluminium plate fin or copper tube with the lead clip of the insulation resistance tester and measure the resistance by placing a probe on N terminal, and then on L terminal in the terminal plate (fig.2).

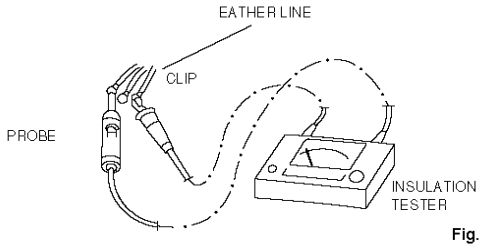


Fig. 1

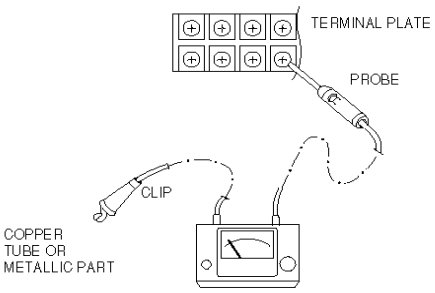


Fig. 2

**b) measurement of insulation resistance for electrical parts**

Disconnect the lead wires of the desired electrical part from terminal plate, PCB assy, capacitor, etc. Similarly disconnect the connector, then measure the insulation resistance (fig.1 to 4). Refer to electric wiring diagram.

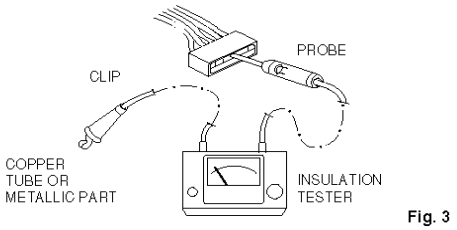


Fig. 3

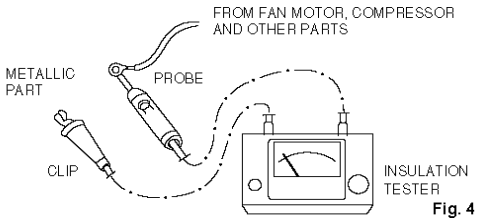


Fig. 4

## - Checking continuity of fuse on PCB assy

Remove PCB assy from electrical component box (fig.5), then pull out the fuse from PCB assy.
Check continuity of fuse by the multimeter (fig.6).

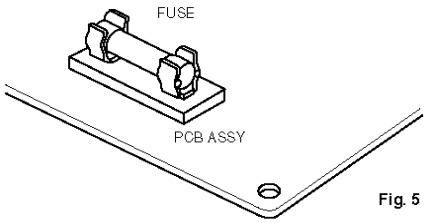


Fig. 5

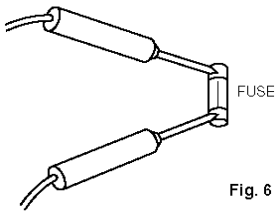


Fig. 6

## - Checking motor capacitor

Remove the lead wires from the capacitor terminals, and then place a probe on the capacitor terminals as shown in fig.7. Observe the deflection of the pointer, setting the resistance measuring range of the multimeter to the maximum value.
The capacitor is "good" if the pointer bounces to a great extent and the gradually returns to its original position. The range of deflection and deflection time deffer according to capacity of the capacitor.

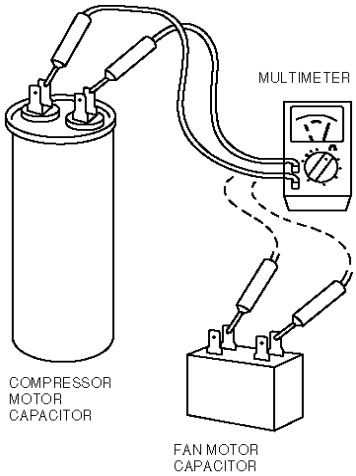


Fig. 7

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